The SDC's overview of the exercise…

January 20, 2000 – Mainframe data processing at the State Data Center (SDC) is stopped due to an accident. Emergency teams respond to the accident and access to the SDC is restricted due to the potential for toxic and/or caustic chemical and elemental exposures. A team of law enforcement, SDC and government officials is established to assess the damage.

January 21, 2001 – Sunday headlines read **"**Millennium 2001**",** "Technology Turmoil", "E-Disaster" and "Data Processing – NOT". The SDC provides mainframe data processing for state law enforcement, social services, revenue, labor and industrial relations, natural resources, mental health, health and administration systems. Limited access to the SDC is granted only under special conditions hampering the damage assessment process.

January 22, 2001 – Initial assessments of the damage indicate a need for alternate mainframe data processing capabilities (irreparable damage to any one of the three SDC central processing units, tape or disk drives would create this). The SDC subscribes to a service provider located on the East Coast for just such a need. The SDC begins packaging of the 10,000+ back up data tapes stored in the Office of the Secretary of State's vault. A request for emergency funding is made to support a disaster declaration. Missouri experiences doing business without mainframe data processing.

January 24, 2001 – Funds are appropriated, a disaster is declared, the service provider is notified and plans are activated to recover at the alternate mainframe data processing facility located on the East Coast. Additional communication circuits (4 – T3s) are requested (estimated cost of $120,000 per month with the proposed delivery date being 30 days from receipt of request). State agencies are requested to plan for not having access to data for at least 30 days.

January 25, 2001 – Clearance is granted for staff to reenter the SDC and to begin the setup of a DR command center. The DR command center is needed to facilitate remote recovery of data from the back up tapes once they become available for use at the East Coast facility. The 10,000+ back up data tapes are shipped to the East Coast facility.

January 26, 2001 – Equipment from the service provider, needed for the DR command center and to establish communications from the SDC to the East Coast, arrives.

January 27, 2001 -- Existing communication circuits to the East Coast facility are tested and it is estimated that it will only be adequate for minimal (less than 100 users) access.

January 28, 2001 -- Back up data tapes arrive at the alternate mainframe data processing facility located on the East Coast. Contracted operation staff place the tapes in volume and serial order while they become acclimated (at least 24 hours) to the new environment and available for use.

The SDC's overview of the exercise…

The Exercise was scheduled from January, 29 2001 at 7:00 a.m. until February 1, 2001 at 7:00 p.m., to be held in Gaithersburg, Maryland. Pre-exercise meetings began during December of 2000 with all SDC Customers invited. The State Data Center (SDC), Office of Administration (OA), Department of Social Service (DSS), Missouri State Highway Patrol (MSHP), Department of Labor and Industrial Relations (DOLIR) and Department of Revenue (DOR) elected to participate. With the OA and SDC piloting and evaluating IBM's Agregate Back up and Recovery System (ABARS) as a potential DR strategy. Two pre-exercise tele-conference calls were held with the SDC and IBM Hot Site staff, during December of 2000 and January of 2001, to prepare and refine the requirements for the exercise.

Beginning on January 3, 2001 approximately 10,000 DR back up tapes (40 SDC hours involved) were packaged on 9 pallets for pick up on January 17, 2001. Due to a fork lift accident 10 pallets were delivered to Gaithersburg, MD on January 23, 2001, fortunately all of the tapes were still in tact. Take note that this was double the number of tapes from last year and as a result the SDC purchased an additional 171 transportation cases. Once the tapes arrived in Gaithersburg, contracted handlers spent 60 hours staging and inventorying them and 160 hours handling them during the actual DR exercise. The SDC only had to overnight ship 9 tapes needed during the exercise this year. Due to the sheer volume of tapes (10,000), tape handling seemed degraded.

The mainframe recovery portion of the exercise started at 7:00 a.m. Monday morning on January 29, 2001 with contracted support restoring a scaled down operating system utilizing a script from the operating systems group. Since the last exercise, a lot of work has been devoted to the script and it paid off. The scaled down operating system was IPLed at 11 a.m. on Monday, giving the Operating Systems group an 8-12 hour jump start into the exercise.

As in previous exercises, problems with communications plagued us again, fortunately all problems were resolved prior to them significantly impacting the exercise. A week prior to the exercise, trials of the Switched 56K (SW56) and T1 circuits were conducted. The SW56 trial was immediately successful but it was discovered that the T1 circuit had been placed in a loop by the provider in order to prevent alarms from occurring, once this was corrected it was also successful. ADVANTIS which in the past has been our last resolve was used minimally during this exercise. The channel extender for the paradyne unit/SW56 system once again arrived incorrectly configured. Problems were also experienced in getting the TCP/IP stack configured to work in the recovery site environment. Virtual private networking (VPN) was tested during this exercise and after a few configuration changes is now available.

Recovery was turned over to SDC Subsystems and Customers by noon on Tuesday (January 30, 2001). This was MSHP's and DOLIR's first opportunity to exercise in the consolidated SDC it was appreciated.

Everyone learned during this exercise.

Comments received…

Department of Social Services

Awaiting information from Tyler Jenkins.

Department of Revenue

- What about e-mail recovery?
- Overview the actual level of effort required to exercise and in the event of a disaster.
- Add realism to the exercise.

Department of Labor and Industrial Relations

Considering this was our first participation, I, personally, am glad we got as far as we did with recovery.

Following are a few problems we encountered:

- Needed IP address added to our router table and $RESCUE TSO profile. (Resolved)
- Had to manually prepare recovery JCL. (Can be taken care of by adding to SDC's dataset.)
- Had one tape which never left SDC. (I am considering having two days of backups vaulted)
- Had to add DELETECATALOGENTRY keyword to ADRDSSU restores. (Resolved)
- About half our data set restores failed with ADR380E rc 25 or 29 (This may have to wait until next exercise to resolve and may be HSM related)

Following are some things to be remembered for next exercise:

- SYSPRINT to a dataset to facilitate documentation. (Dataset can be dumped to tape and returned)
- May wish to hold a copy of vaulted tapes onsite (In case we need to overnight a missed tape), or have two days backup vaulted
- Need to prepare initial recovery JCL and have added to SDC dataset.

Additionally, I would like to thank you for your help and expertise during this process and would like to note that SDC staff were very responsive and helpful.

Comments received…

Missouri State Highway Patrol

The MSHP did not get to the point to actually test applications on the DR site. We encountered some first time participant problems, but feel that it was still a success since these were problems that could be expected.

- We did not know which procedure to use when signing on to the DR TSO region. This caused us to think that we had to operate in TSO from the Ready prompt. This problem was solved with a couple of phone calls to the SDC.
- When trying to restore DB2 datasets, we found that VSAM cluster datasets already existed due to the restore of the system catalog. By the time we were trying these restores, we were nearing the end of our testing time and did not get to complete these or any other application data restores.
- We found a few CICS and SUPRA datasets that need to be in the vault.

OA/DIS/Systems and Programming

Things Done Right

- JOBSCAN was working.
- TelNet once again worked great after the initial problems with the IP stack were resolved.
- $RESCUE logon proc worked great.
- Received timely help from SDC staff with problems.
- ABARS worked great (with the exception of catalog and tape problems).

Things Done Wrong

- Problems with IP stack.
- Once again, I seem to have had the wrong phone number for reporting problems.
- Second recycle of JES should have included the proclibs.
- Many, many problems with tape mounts, but this is probably something SDC could not control.
- CA-7 was not up.
- Miscommunication with DB2 database group on which day's backup would be used for the DB2 catalog resulting in an out-of-sync condition between OA's DB2 datasets and the catalog.
- Could not get DB2I to work at recovery site.
- Problems with locking up CV10 or bringing it down. Not sure what was causing this.

Comments received…

- SDC's catalog backups were much more recent than OA's ABARS backups causing an out-of-sync condition between our ABARS backup datasets and the catalog. Once we are doing these daily, this problem should not reoccur.

OA/DIS/State Data Center

(What went wrong and/or right)

- Thanks to OSS, we have developed the most complete set of inventory for our vault. We did not have a need to create any special reports to use in preparation of the vault tapes, for tracking the datasets while at the disaster recovery site, or for returning the tapes.
- En route, one skid of tapes shifted and became detached from the skid. No tapes were reported as "spilled" or damaged.
- Two tapes (that were a part of a special shipment) were not found in time for the owner to test the application. The tapes were located after the fact, but they should have been a part of the initial inventory.
- Some customers were not aware of the tape cut-off date and others were still not clear as to decide which datasets would be available.
- The testing portion on 01-19-01 went fairly smooth. We were able to get dialed in through our Switched 56 in a timely manner. Just a reminder that this was only a test between the two DSU's.
- Began the dial-up process at 09:00 a.m. on 01-29-01. After getting a number to dial a continuous busy signal was encountered. The remote site then attempted to dial our DSU, a connection was made but still were unable to make the System consoles come active. It was then determined that the Channel Extender had the wrong configuration in the machine. A dial-up modem was then installed on our end so that a technician could download the proper configuration on to our channel extender. The configuration that we received on the extender was from Blue Cross/ Blue Shield. A copy of an air freight receipt was found in the equipment when it was delivered, it looks as though the equipment was shipped directly from Blue Cross to the data center. We were still unable to make a connection with the system consoles. It was then determined that the channel cables on the back of the channel extender needed to be installed on "side B" instead of "side A". A label on the channel cables clearly stated that the cables should be connected to "side A". After these were changed the system came active at 12:15. The cables were again in bad physical condition. Black tape seems to be holding one of the cables together.
- Concerning the IP Router test, the port was not switched for us to have a link to the remote site. Several phone calls to phone companies involved were needed to finally determine that the port was not switched at the remote site.
- On Tuesday, I thought Auto Operator (A/O) was up and running fine on 04. However while I was forcing objects down (SDAPs in particular), A/O was repeatedly trying to start all the remote printers that were not defined to the D/R

Comments received…

system. This caused the D/R IP04 LPAR to lock up and have to be IPLed. Wednesday I disabled all tasks by answering 'N' to the startup question, then manually starting objects one at a time. The Tuesday problem was due to a 'Y' being given to the startup question.

- Need to include an Automatic Tape Library (ATL) in the D/R configuration for HSM recovery tapes because it takes to long waiting for the operators to mount the tapes. I believe this is a must have hardware for the new contract.

(Things to do better)

- Secure turtle cases with web strap to avoid load shift/separation from skid. Ask shipper what we can to do avoid the shifting of loaded tapes.
- Require a COMPLETE inventory and confirm that all instructional material is unpacked, reviewed, and understandable.
- Better communicate to all customers, the cut-off date and do our utmost to assure they understand the concept.
- Next year we have about 3 Auto Operator (A/O) options: 1) Since A/O did work, not test it next year. 2) Make sure an 'N' is given to the auto startup questions, or 3) Create duplicate data sets for all A/Os, one set for normal and another for D/R testing.
- At the beginning of the exercise and/or in the event of a disaster share as much information about the recovery tapes sent to the recovery center (dates, series, generations) as available.